20 QUESTIONS:

Evidence-based practice *or* sacred cow?

By Julie Miller, BSN, RN, CCRN;
Denise Drummond Hayes, MSN, RN, CRNP;
and Katherine W. Carey

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DESPITE DRAMATIC ADVANCES in nursing and medical research, many nurses continue to promote outdated nursing practices that have been proven ineffective, unnecessary, and in some cases, downright dangerous. Based on tradition rather than science, these "sacred cows" are often revered by nurses and hard to dislodge from practice.

Last year, *Nursing* conducted a nationwide survey to gather information about current nursing practice. A total of 2,356 respondents answered 20 true/false questions designed to test nurses' understanding of best practices. The survey instrument was presented in the journal and online.

This article reviews the survey results and provides evidence-based rationales for the correct responses. In cases where the correct response is ambiguous or unsettled, the best available evidence is discussed. The correct answer is highlighted in red. Percentages may not add up to 100 because numbers have been rounded. Not all respondents answered every question.

1. Patients experiencing hypotension and shock should be placed in Trendelenburg position to improve blood flow to the heart and brain.

True: 51%	False: 49%

False. Trendelenburg position was originally developed in the 1880s to expose pelvic organs during surgery. Its use was popularized during World War I to treat hypotensive shock. Widespread use was adopted despite numerous calls to stop using it as a method of resuscitation for hypotension.

The Trendelenburg position has been studied for the last 50 years.

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Most studies show no improvement in cardiac output or BP with its use. Although some anecdotal reports have noted a transient improvement in both cardiac output and BP, those changes usually last less than 10 minutes.

Patients who are placed in Trendelenburg position for hypotension are at risk for experiencing profound hemodynamic compromise, increased intracranial pressure, and altered respiratory mechanics. Additionally, patients who are obese or who have right ventricular failure, pulmonary disorders, or head injuries have been found to suffer adverse consequences from Trendelenburg positioning.

The take-home message here is to stop using Trendelenburg position to manage hypotension and hypotensive shock. If your patient experiences hypotension, position him or her supine with the lower extremities elevated. This position improves venous return to the right heart without causing overwhelming cardiac compromise.

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2. Scrubbing the hub of an I.V. port for a minimum of 15 seconds before accessing a central line has been shown to reduce central line-associated bloodstream infections.

True: 81% | **False: 19%**

Probably true. Although the optimum amount of time for hub disinfection remains to be determined, the suggested time frame ranges from 5 to 15 seconds. The 2014 practice guidelines from The Society for Healthcare Epidemiology of America (SHEA), the Infectious Diseases Society of America (IDSA), and other agencies suggest applying vigorous mechanical friction for no less than 5 seconds before accessing catheter hubs, needleless connectors, or injection ports. Most references recommend 10 to 15 seconds. The guidelines also suggest the use of 0.5% chlorhexidine gluconate in 70% alcohol preparation, 70% alcohol, or povidone-iodine solutions with consideration that the alcohol-chlorhexidine solution may have additional residual activity over alcohol. The guidelines recommend monitoring scrub-the-hub compliance because most access ports remain colonized under conditions of standard practice.

Vigorous mechanical friction technique in scrubbing the hub with alcoholic chlorhexidine, povidone-iodine, or 70% alcohol solution will help reduce the incidence of central line-associated blood stream infections. Current accepted practice is to scrub from a minimum of 5 to 15 seconds.

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3. Instilling normal saline solution before endotracheal suctioning improves oxygenation, facilitates removal of secretions, and stimulates coughing to mobilize secretions.

True 35% | **False: 65%**

False. Little research supports the use saline instillation before endotracheal (ET) tube suctioning to improve oxygenation or removal or to thin secretions. In 2010, after reviewing 19 years of literature, the American Association of Respiratory Care published clinical practice guidelines that recommended against the routine instillation of normal saline prior to suctioning. Other studies have demonstrated that normal saline instillation may actually be detrimental by increasing the risk of ventilator-associated pneumonia (VAP) due to bacterial contamination of the saline vials.

Based on current literature and best practice, saline instillation prior to ET suctioning shouldn't be done routinely.

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4. Auscultating the abdomen while injecting air through a gastric feeding tube is a reliable way to ensure proper tube placement.

True 31% | **False: 69%**

False. Traditionally, auscultation during air insufflation through the feeding tube has been used to verify feeding tube placement at the bedside. To use

this method, the clinician instills air into the feeding tube while listening with a stethoscope placed over the stomach. The assumption is that the sound of air entering the stomach confirms that the tube is placed correctly in the stomach. However, research has shown that this assumption is unreliable. The auscultatory method can't detect when the distal end is located in the esophagus or distinguish between gastric and small bowel placement. Misleading findings are known as *pseudoconfirmatory gurgling*.

In 2012, a safety alert was distributed by the Child Health Patient Safety Organization recommending the immediate discontinuation of the auscultation method for assessment and verification of gastric tube tip placement. When in doubt, obtain a radiograph to determine gastric tube location.

For more discussion and details on confirming feeding tube placement and other enteral feeding guidelines, see *"What's on the Menu? Delivering Evidence-based Nutritional Therapy"* in this issue.

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5. Before initiating enteral nutrition, pH testing of gastric tube aspirate is a reliable way to ensure that the tube is properly placed in the stomach.

True: 51% | **False: 49%**

False. Gastric pH testing doesn't reliably confirm correct placement of a gastric tube. It's true that gastric fluid is usually acidic with a pH less than or equal to 5.5, and respiratory secretions are almost always alkaline with a pH greater than or equal to 6.0. But several conditions can affect the pH of these aspirates. For example, gastric pH will rise temporarily when the patient is receiving enteral feedings or certain medications, such as a proton pump inhibitor.

Guidelines from the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) recommend radiographic confirmation for any blindly inserted gastric tube (small or large bore) before its initial use for instillation of medications or feedings in adults. Marking the tube at the exit site with an indelible marker after radiographic confirmation is also recommended.

In 2014, A.S.P.E.N. affirmed that abdominal radiographs or chest radiographs that include the abdomen are most reliable for confirmation of gastric tube tip location. This recommendation extends to the pediatric population. Methods for ongoing verification of gastric tube placement include assessing the external tube length for changes.

Respondent profile

Age. Most respondents (57%) were over age 50. About 35% were from ages 31 to 50. Less than 9% were age 30 or younger.

Years of nursing experience. Approximately 75% of survey respondents had more than 11 years' experience in nursing; 36% had over 30 years of experience. About 22% had between 1 and 10 years of nursing experience. Only about 3% had less than 1 year of experience.

Practice settings. Most respondents (64%) worked in a hospital, with the rest scattered among various settings such as ambulatory/outpatient care (7%), home healthcare/community health (6%), and long-term/subacute care (7%).

Practice specialty. The largest proportion of respondents reported medical-surgical as their primary clinical area (27%), followed by critical care/intensive care (12%) and emergency (7%). About 34% responded "other."

Educational level. The largest proportion of respondents to this survey held a bachelor's degree (39%), followed by master's degree (25%), associate's degree (19%), diploma (8%), licensed practical/vocational nursing (3%), and doctoral degree in nursing (3%). About 1% of respondents were nursing students. A few respondents reported their highest educational level in a field other than nursing.

Certification. Thirty-eight percent of respondents were certified in their area of specialty.

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6. Continuous aspiration of subglottic secretions helps prevent ventilator-associated pneumonia (VAP).

True 29% | **False: 71%**

True. Numerous studies and evidence-based guidelines recommend continuous or frequent intermittent drainage of subglottic secretions

using an ET tube with a dorsal lumen above the cuff in adult patients. The 2014 SHEA/IDSA guidelines for reducing VAP recommend using ET tubes with subglottic suctioning ports in patients expected to require mechanical ventilation for at least 48 hours. As reported in the guidelines, a meta-analysis of 13 randomized controlled trials showed that use of ET tubes with subglottic drainage reduced VAP rates by 55%, reduced mechanical ventilation duration by 1.1 days, and shortened ICU length of stay by 1.5 days.

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7. Checking gastric residual volume before initiating enteral feeding is necessary to assess gastric emptying and reduce aspiration risk.

True: 78% | **False: 22%**

Probably false. More research is needed about the frequency and significance of gastric residual volume (GRV) measurements. Historically, elevated GRV has been used as a measure of tolerance to enteral tube feedings, but the evidence doesn't support measuring GRV as a single tool for evaluating enteral feeding tolerance or for preventing aspiration. Elevated GRV when combined with other patient assessment data such as nausea, vomiting, abdominal distension, sepsis, use of sedation, or the addition of vasopressors does show worsening patient outcomes. Research shows that measuring GRV doesn't correlate with aspiration risk and interferes with nutritional support.

All patients fed enterally should be assessed for aspiration risks, such as hemodynamic instability, sepsis, altered level of consciousness, and mechanical ventilation. Nurses must assess beyond GRV for other measures of intolerance, such as abdominal distension, nausea, vomiting, and abdominal pain. The 2009 A.S.P.E.N. practice guidelines for enteral feeding recommend the following strategies for preventing aspiration:

- Ensure that the feeding tube is in the proper position before initiating feedings.
- Keep the head of bed (HOB) elevated 30 to 45 degrees during administration of enteral feedings.
- If possible, utilize a large-bore sump tube for the first 24 to 48 hours of enteral feeding and evaluate GRV using at least a 60-mL syringe.
- Assess GRV every 4 hours during the first 48 hours in patients receiving gastric tube feedings. After the enteral feeding goal rate is achieved and/or the sump tube is replaced with a soft, small-bore feeding tube, GRV monitoring may be decreased to every 6 to 8 hours in noncritically ill patients. However, every-4-hour measurements are recommended in critically ill patients.
- If GRV is greater than 250 mL after a second GRV measurement, consider the addition of a promotility agent in adults.
- For GRV greater than 500 mL, hold enteral nutrition and reassess patient tolerance with an established algorithm including physical assessment, GI assessment, evaluation of glycemic control, minimization of sedation, and consideration of a promotility agent.
- Consider placement of a feeding tube below the ligament of Treitz when GRV measurements are consistently more than 500 mL.

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8. Continuous enteral nutrition should be stopped before a patient is turned or repositioned.

True: 59% | **False: 41%**

False. The evidence doesn't support the practice of holding tube feedings when lowering the HOB or repositioning patients for routine care. In fact, research shows that it's not only unnecessary, it's detrimental. In one study, 30% of 45 critically ill patients received inadequate calories because feedings were suspended during nursing care.

Best practice is to minimize interruptions in enteral feedings. Don't suspend feedings for short periods when the HOB needs to be lowered for nursing care. Although feeding should be stopped for procedures requiring the HOB to be lowered for a prolonged period, it should resume immediately when the procedure is complete. Follow your facility's enteral nutrition protocol

to ensure that patients receive their prescribed calories.

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9. Kinetic and continuous lateral rotation therapy reduces the risk of ventilator-associated pneumonia.

True: 74% | **False: 26%**

True. Continuous lateral rotation therapy (CLRT) has been shown to reduce the prevalence of VAP in appropriately selected patients. Most studies agree that intervention with CLRT should be initiated within 48 hours of when the patient meets criteria for benefiting from CLRT. Criteria used to identify patients who will benefit from this intervention include a ratio of arterial oxygen tension to fraction of inspired oxygen (Pao_2/Fio_2) less than 300 mm Hg or the need for increasing levels of positive end-expiratory pressure and Fio_2 to maintain oxygenation. Research shows that CLRT can reduce the incidence of VAP, shorten ventilation time, and shorten length of stay. Study results are mixed regarding the best degree of lateral rotation.

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10. Benzodiazepines such as lorazepam are a first-line treatment for insomnia, agitation, and delirium in older adults.

True 14% | **False: 87%**

False. According to the Pain, Agitation, Delirium (PAD) guidelines published in 2013 by the American College of Critical Care Medicine, "elderly patients are significantly more sensitive to the sedative effects of benzodiazepines. Benzodiazepines can cause respiratory depression and systemic hypotension, especially when administered in conjunction with other cardiopulmonary depressants, particularly opioids." In addition, hepatic impairment, common in older adults, reduces clearance of benzodiazepines. The Beers criteria strongly recommend against use of benzodiazepines in older adults citing the high quality of evidence supporting this position.

Agitated patients should be promptly assessed to identify underlying causes, such as pain, hypoxemia, delirium, or alcohol withdrawal, and treated accordingly. Besides pain control, recommended first-line strategies to manage agitation and promote sleep in older adults include grouping nursing interventions to minimize interruptions, controlling noise and light in the environment, and minimizing stimuli at night to promote normal sleep-wake cycles. The PAD guidelines also recommend using progressive mobility to reduce the incidence of delirium in adult ICU patients. Nonbenzodiazepine medications are recommended to reduce the incidence of delirium in all adults on mechanical ventilation.

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11. The routine use of hyperventilation to reduce increased intracranial pressure (ICP) is considered a standard of care.

True 19% | **False: 81%**

False. Routine use of hyperventilation isn't recommended due to the risk of cerebral ischemia from reduced partial pressure of arterial carbon dioxide ($Paco_2$).

Research shows that mechanical ventilation can rapidly reduce ICP due to vasoconstriction and a reduction in intracranial blood volume; however, the effects are temporary (24 hours or less). Therapeutic hyperventilation is an option for managing ICP in certain urgent situations but isn't indicated on a chronic basis, particularly in patients with acute stroke or traumatic brain injury (TBI).

Limiting the use of hyperventilation has been shown to improve 3- and 6-month outcomes for patients with TBI. Most patients with severe TBI have elevated ICP. In the past, hyperventilation has been used routinely to reduce ICP associated with severe TBI, but numerous studies have documented cerebral ischemia and poor outcomes in patients managed with routine hyperventilation.

The most recent guidelines for severe TBI published in 2007 advise avoiding hyperventilation in the first 24 hours following TBI, when cerebral blood flow is often already reduced.

These guidelines also recommend that hyperventilation be used only as a temporizing measure for increased ICP. When it is used, either jugular venous oxygen saturation or brain tissue oxygen tension levels should be monitored to assess oxygen delivery.

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12. Visitors should be restricted for patients with TBI to prevent spikes in ICP.

True: 30% | **False: 70%**

Probably false. The literature is mixed and limited with regards to visitation and its effect on ICP. What is known is that with patients who have elevated ICP, appropriate interventions include maintaining a quiet, low-stimulation environment. Visitors who can maintain this type of an environment may be beneficial to the care of the patient. A gentle, soothing tone of voice and calming touch are also important.

For the nursing profession, the impact visitors may have on a patient's ICP is an area requiring further study. However, the American Association of Critical-Care Nurses recommends open visiting policies in the ICU because the evidence shows that "the unrestricted presence and participation of a support person can enhance patient and family satisfaction, because it improves the safety of care."

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13. To reduce aspiration risk, healthy preoperative adults who are undergoing elective procedures should be N.P.O. after midnight.

True: 67% | **False: 33%**

False. Current anesthesia guidelines suggest that the traditional N.P.O.-after-midnight protocol should no longer be implemented. Studies comparing GRV and gastric pH in patients who were N.P.O. from clear liquids for 2 to 4 hours to that of patients who were N.P.O. for more than 4 hours showed higher GRV and lower pH values in the patients who'd been N.P.O. for more than 4 hours. Studies also have shown that when N.P.O. overnight is compared with N.P.O. for 6 hours after a light meal (toast), results are equivocal regarding gastric volumes.

Current anesthesia guidelines and literature for healthy adults provide recommendations for fasting from solids and clear liquids. For clear liquids, the minimum fasting period can be shortened to 2 hours prior to elective procedures requiring general anesthesia, regional anesthesia, or sedation/analgesia. For a light meal, the minimum fasting period can be shortened to 6 hours before elective procedures requiring general anesthesia, regional anesthesia, or sedation/analgesia. For patients who consume a meal that includes fatty or fried foods, the recommendation is a minimum fasting period of 8 hours or more prior to elective procedures requiring general anesthesia, regional anesthesia, or sedation/analgesia. (These recommendations don't apply to women in labor.)

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14. Unless contraindicated, the HOB should be elevated 30 to 45 degrees to prevent ventilator-associated pneumonia.

True: 87% | **False: 13%**

True. Guidelines and studies support elevating the HOB to 30 to 45 degrees as a measure to prevent aspiration leading to VAP and hospital-acquired pneumonia.

HOB elevation is a simple, low-cost intervention that doesn't cause harm, whereas supine positioning predisposes the patient to aspiration. The SHEA/IDSA guidelines recommend placing endotracheally intubated patients in the semirecumbant position unless contraindicated.

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15. Wet-to-dry gauze dressings promote healing in clean granulating chronic wounds.

True 41% | **False: 59%**

False. In chronic wounds with an adequate blood supply, a moist environment supports healing. Wet-to-dry dressings don't maintain a moist environment when they dry out. In

addition, removing a dried dressing also removes newly deposited granulation tissue from the wound bed and is painful for the patient. In general, wet-to-dry dressings should be avoided for clean granulating chronic wounds.

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16. When preoperative hair removal is necessary, it should be performed with a surgical clipper rather than a razor.

True: 89% | **False: 11%**

True. Preoperative shaving of surgical sites is no longer the standard of care. Shaving a site the night before surgery significantly raises the risk of a surgical site infection (SSI) compared with use of depilatory agents, clipping hair immediately before surgery, or no hair removal at all. Shaving produces microscopic cuts that invite infection, and depilatories may produce hypersensitivity reactions. Some studies indicate that all methods of hair removal increase the risk of SSIs compared with no hair removal.

The current standard is to avoid hair removal unless the hair will interfere with the surgery. If hair removal is indicated, it should be performed with electric clippers immediately before the procedure.

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17. To clean the skin of patients with fecal incontinence, use a no-rinse bathing/perineal cleaning product rather than soap and water.

True: 63% | **False: 37%**

True. Cleaning the skin with soap and water is irritating and can damage skin due to mechanical friction and alkalinity of soap. No-rinse bathing products, which are pH balanced, gently reduce the amount of residual bacteria colonized on the skin. Ensuring the skin remains moisture-free is also a strategy known to help reduce the incidence of pressure ulcer development. Frequent linen changes and using a moisture barrier are best practices to help reduce moisture.

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18. By diverting feces into a collection bag, rectal tubes can help prevent perianal tissue damage in critically ill patients with fecal incontinence.

True: 75% | **False: 25%**

False. The use of rectal tubes is a tradition that many nurses ascribe to; however, it's the least safe procedure for managing fecal incontinence. Mushroom-shaped catheters or traditional urinary catheters with a balloon are likely to damage the rectal vault and sphincter. Best practice for managing fecal incontinence includes assessment of the cause of the diarrhea/incontinence and the use of fecal collection devices such as rectal pouches/bags.

Assess and manage the cause of the patient's diarrhea. If a collection device is needed, use a rectal pouch or bag, not a rectal tube.

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19. Evidence-supported indications for inserting an indwelling urinary catheter include major trauma, bladder irrigation, and comfort care for terminally ill patients.

True: 78% | **False: 22%**

True. According to current guidelines from the Healthcare Infection Control Practices Advisory Committee, appropriate indications for indwelling urinary catheterization include:

- treating acute urinary retention or obstruction
- accurate measurement of urinary output in critically ill patients
- aiding healing of open sacral or perineal wounds in incontinent patients
- selected perioperative situations, such as urologic surgery
- multiple traumatic injuries such as pelvic fractures
- patient comfort at end of life, if needed.

Insertion of indwelling urinary catheters is inappropriate for caregiver convenience or patient comfort except during end-of-life care. Catheters should be inserted only when absolutely necessary and removed as soon as they're no longer needed to reduce the risk of catheter-associated urinary tract infections (CAUTIs). Consider alternatives such as intermittent catheterization and external catheters

for males who can cooperate with treatment.

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20. To reduce the risk of catheter-associated urinary tract infections, nurses should perform routine meatal care with soap and water during daily bathing.

True: 83% | **False: 17%**

True. Best practices support using soap and water to clean the meatal surface around the catheter during daily routine catheter care. Cleaning the meatal surface with antiseptic solutions while a catheter is in place is ineffective for preventing CAUTI and not recommended.

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More education needed?

Some nurses may need more education about certain evidence-based practice guidelines discussed in the accompanying article, as indicated by the high percentages of incorrect answers to the following survey items.

Question #1
Patients experiencing hypotension should be placed in Trendelenburg position.
False. Incorrect responses: 51%.

Respondents answering correctly were most likely to be older (age 40 or more), more experienced (16 years of experience or more), and more highly educated (master's or doctoral degree). Among nurses with BSN degrees, 49% answered correctly.

Question #5
Testing pH of gastric tube aspirate is a reliable way to ensure proper feeding tube placement before initiating enteral nutrition.
False. Incorrect responses: 51%.

Similar to the profile for responses about Trendelenburg positioning, nurses answering correctly were older, more experienced, and more highly educated. Among nurses with 1 to 5 years' experience, only 38% answered correctly. Among LPNs/LVNs, 42% answered correctly.

Question #6
Continuous aspiration of subglottic secretions helps prevent VAP.
True. Incorrect responses: 71%.

Nursing students made up less than 2% of survey respondents (n=29), but they scored the best among all levels of education with 45% answering correctly. Fewer than 30% of respondents with an RN diploma, associate's degree, or bachelor's degree answered correctly. Thirty-three percent of respondents with a master's degree answered correctly.

Question #7
Checking gastric residual volume before initiating enteral feeding is necessary to assess gastric emptying and reduce aspiration risk.
False. Incorrect responses: 78%.

A high percentage of all respondents got this wrong, regardless of age, years of experience, or level of education.

Question #8
Continuous enteral nutrition should be stopped before a patient is turned or repositioned.
False. Incorrect answers: 59%.

Percentages of respondents answering incorrectly were higher for younger respondents (between ages 21 and 40) than for respondents over age 40. Percentages of correct answers were comparable at most levels of education (40% or less), although 52% of master's-prepared nurses answered correctly.

Question #13
To reduce aspiration risk, healthy preoperative adults who are undergoing elective procedures should be N.P.O. after midnight.
False. Incorrect answers: 67%.

Current guidelines on perioperative fasting were issued in 2011. Less than 20% of newer nurses (5 years' experience or less) answered correctly; among age groups, scores were similar for younger nurses (ages 21 to 30). However, among educational levels, the percentage of correct answers increased as the level of education rose. About 65% of respondents with a doctoral degree in nursing answered correctly, but this group comprised only about 3% of all respondents (n=49).

Survey limitations and conclusions

Respondents to this survey varied in nursing experience, practice setting, and educational preparation. The variety of practice settings could cause misinterpretation as to how well nurses are responding to changes in evidence-based practice because some respondents are practicing in an area where the question posed was not a daily part of nursing care. The survey also didn't allow for an "I don't know" response, which may have forced the respondent to guess and possibly skewed the results.

For nursing practices that have been highlighted in the literature in recent years, such as scrub-the-hub and recommendations for preventing VAP and CAUTIs, the results showed that most respondents were familiar with the practice changes and how to improve patient care for these patients. For other less well-publicized practice changes, such as those for managing GRV, stopping/starting tube feedings for position changes, managing fecal incontinence, and preoperative fasting, the results showed that the respondents were less aware and in need of change to follow best practices. (See *More education needed?*)

Nursing practice is constantly evolving as new evidence accumulates. Staying informed about best practices is challenging, as is implementing changes to nursing practice in accord with the evidence: Practice changes based on new evidence in healthcare can take up to 17 years.[1]

To keep up with the rapid changes in healthcare and nursing, the nursing profession must do everything in its power to adapt quickly to new and evolving evidence and not cling to comfortable traditions because "that's the way we've always done it." ■

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Julie Miller is a staff development educator for critical care at the Trinity Mother Frances Hospitals and Clinics in Tyler, Tex., and president and founder of Paws to Learn in Whitehouse, Tex. Denise Drummond Hayes is senior clinical editor of *Nursing2015*. Katherine W. Carey is executive editor of *Nursing2015*.

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